What is claimed is:

1. A head for use in a magnetic recording system including a magnetic media with perpendicular magnetic polarity transitions written thereon, said head for transferring data between the magnetic media and an exterior environment, said head comprising:

a write element for inducing said perpendicular magnetic polarity transitions into a surface of said magnetic media during a write operation; and

a yoke disposed within said write element, said yoke having a read gap for sensing said perpendicular magnetic polarity transitions.

2. The head, as claimed in Claim 1, further comprising:

a magnetoresistive element mounted in a flux flow path of said yoke.

3. The head, as claimed in Claim 2, wherein said read gap of said yoke is disposed at a first distance from said magnetic media and said magnetoresistive element is disposed at a second distance from said magnetic media, said first distance being smaller than said second distance.

4. The head, as claimed in Claim 2, wherein said magnetoresistive element produces a readback pulse having a substantially Lorentzian-type pulse shape.

The magnetic recording system

5. ~~The head~~, as claimed in Claim 1, wherein said head is a planar head.

The magnetic recording system

6. ~~The head~~, as claimed in Claim 1, wherein said write element comprises a write pole having a leading edge, wherein said leading edge and said read gap are separated by a distance.

The magnetic recording system

7. ~~The head~~, as claimed in Claim 1, wherein said write element includes a non-magnetic spacer for substantially preventing flux flow through said write element during a read operation.

8. The head, as claimed in Claim 1, wherein

said write element comprises first and second write poles, wherein said first and second write poles have first and second cross-sectional widths, respectively,

said first cross-sectional width being larger than said second cross-sectional width.

9. The head, as claimed in Claim 8, wherein said first cross-sectional width is about 10 to 100 times larger than said second cross-sectional width.

10. The head, as claimed in Claim 1, further comprising:

first, second and third pole pieces wherein said first, second and third pole pieces are in a common plane with said read gap, said common plane being defined by masking during fabrication.

11. ~~The head~~ The magnetic recording system, as claimed in Claim 6, wherein:

said write pole is integral with said yoke.

12. ~~The head~~ The magnetic recording system, as claimed in Claim 6, wherein:

said leading edge of said write pole is separated from said read gap by about 2 to about 3 microns.

13. ~~The head~~ The magnetic recording system, as claimed in Claim 1, wherein said write element comprises a first write pole, a second write pole and a coil element operatively coupled to said first and second write poles for writing to said magnetic media.

14. ~~The head~~ The magnetic recording system, as claimed in Claim 1, wherein said yoke is integral with said write element.

15. The ~~head~~ magnetic recording system, as claimed in Claim 1, wherein said yoke is physically smaller than said write element.

16. The ~~head~~ magnetic recording system, as claimed in Claim 1, wherein a length of said read gap ranges from about 0.1 to about 0.2 microns.

17. A magnetic storage device comprising:

a magnetic media having magnetic polarity transitions perpendicularly recorded thereon; and

a read element for reading said perpendicular magnetic polarity transitions, said read element including:

a flux-guide having a read gap, said read gap used for sensing said perpendicular magnetic polarity transitions and for producing a magnetic flux in said flux-guide.

18. The magnetic storage device, as claimed in Claim 17, wherein said read element further includes:

a magnetoresistive element mounted in said flux-guide for sensing said magnetic flux within said flux guide.

19. The magnetic storage device, as claimed in Claim 17, wherein said read gap is disposed at a first distance from said magnetic media and said magnetoresistive element is disposed at a second distance from said magnetic media, said first distance being smaller than said second distance.

20. The magnetic storage device, as claimed in Claim 17, further comprising:

means for filtering a readback signal produced by said read element, wherein said means for filtering produces a signal having a substantially Lorentzian pulse-shape.

21. The magnetic storage device, as claimed in Claim 17, further comprising:

a write element for writing said perpendicular magnetic polarity transitions on said magnetic media, said write element including:

first and second write poles having a first and second ends, respectively, said first and second ends located proximate to a surface of said magnetic media;

a coil element operatively coupled to said first and second write poles for writing to said magnetic media.

22. The magnetic storage device, as claimed in Claim 21, wherein said first and second write poles comprise first and second cross-sectional widths, respectively,

said first cross-sectional width being larger than said second cross-sectional width.

23. The magnetic storage device, as claimed in Claim 22, wherein said first cross-sectional width is about 10 to 100 times larger than said second cross-sectional width.

24. The magnetic storage device, as claimed in Claim 21 wherein said write element is integral with said read element.

25. The magnetic storage device, as claimed in Claim 21, wherein said read element is positioned within said write element.

26. The magnetic storage device, as claimed in Claim 25, wherein said read element is physically smaller than said write element.

27. The magnetic storage device, as claimed in Claim 17, wherein said read element produces a readback pulse having a substantially Lorentzian pulse shape.

28. The magnetic storage device as claimed in Claim 21, wherein said write element includes a non-magnetic spacer for substantially preventing flux flow through said write element during a read operation.

29. The magnetic storage device, as claimed in Claim 17, wherein said read element is in virtual contact with said magnetic media.